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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



re application of:

Yoshifumi TANIMOTO

Serial No: Not assigned

Filed: June 26, 2000

For: COMMUNICATION SYSTEM AND METHOD

Box PATENT APPLICATION
Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Transmitted herewith for filing is the patent application identified above.

- ☒ 4 sheet(s) of drawings (☒ formal ☐ informal) is(are) enclosed.
- ☒ 15 page(s) of specification and 1 page(s) of abstract of the invention are enclosed.
- ☒ An assignment of the invention to MURATA KIKAI KABUSHIKI KAISHA ☒ is enclosed ☐ will follow.
- ☐ An associate power of attorney ☐ is enclosed ☐ will follow.
- ☐ A verified statement to establish small entity status under 37 C.F.R. §§ 1.9 & 1.27 is enclosed.
- ☒ Declaration and Power of Attorney ☒ is enclosed ☐ will follow.
- ☒ A certified copy of Japanese Patent Application No. 11-198180 filed July 12, 1999 from which priority is claimed under 35 U.S.C. § 119 is enclosed.
- ☒ IDS enclosed (☒ with references).
- ☐ Preliminary Amendment is enclosed.

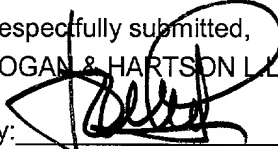
CALCULATION OF FEES								
ITEM		TOTAL NO. OF CLAIMS		NO. OF CLAIMS OVER BASE	LG/SM \$ ENTITY FEE		\$ AMOUNT	\$ FEE
A	TOTAL CLAIMS FEE	20	-20	0	LG=\$18 SM=\$9	\$18	0	
B	INDEPENDENT CLAIMS FEE*	3	-3	0	LG=\$78 SM=\$39	\$78	0	
C	SUBTOTAL - ADDITIONAL CLAIMS FEE (ADD FINAL COLUMN IN LINES A + B)							\$ 0
D	MULTIPLE-DEPENDENT CLAIMS FEE				LARGE ENTITY FEE = \$260 SMALL ENTITY FEE = \$130		\$ 0	
E	BASIC FEE				LARGE ENTITY FEE = \$690 SMALL ENTITY FEE = \$345		\$ 690	
F	TOTAL FILING FEE (ADD TOTALS FOR LINES C, D, AND E)							\$ 690
G	ASSIGNMENT RECORDING FEE						\$ 40	\$ 40
	*LIST INDEPENDENT CLAIMS 1, 9, 12.							

"Continued on Second Page"

- ☒ A check in the amount of \$ 690 to cover the filing fee is enclosed.
- ☒ A check in the amount of \$ 40 to cover Assignment Recordation fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge any deficiency for the following fees associated with this communication or credit any overpayment to Deposit Account No. 50-1314. **A copy of this sheet is enclosed.**
- ☒ Any additional filing fees required under 37 C.F.R. § 1.16
- ☒ Any patent application processing fees under 37 C.F.R. § 1.17
- Please associate this application with the attorneys of record and with the correspondence address recorded for Customer No. 22335.

Date: June 26, 2000

Respectfully submitted,
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Communication System and Method

Background of the Invention

Field of the Invention

The present invention relates to a communication system in which a communication device such as a facsimile machine and an external device that manages the facsimile machine are connected to each other via a computer network such as a Local Area Network (a "LAN"), and more particularly, to such a communication system in which replacement data sent from the external device is used to overwrite data already stored at the communication device. The present invention also relates to a communication method suited for such communication system.

Description of the Related Art

In recent years, various LAN-capable communication systems have been developed. In one such system, a plurality of communication devices (facsimile machines) and an administrating computer are connected over a LAN.

The facsimile machines normally store speed dial lists of telephone numbers or other data for quick dialing in order to improve the efficiency of the system during transmission. Conventionally, when the administration center (computer) that manages the facsimile machines needs to update the data in the quick dial lists or update other information such as the programming of the facsimile machines, it dials each facsimile machine one by one over the PSTN and over-writes the old data with replacement data.

There are several drawbacks to updating the data stored at the network facsimile machines using this conventional system. First, since the administrating computer

overwrites the data at the network facsimile machines over the PSTN ("Publicly Switched Telephone Network"), a procedure for data overwriting may be time consuming and may increase communication costs. Further, if an error occurs during data transmission, the data overwriting procedure always fails. Still further, this process must be performed individually for each facsimile machine, thus increasing the total amount of time and communication cost required to overwrite data at a plurality of facsimile machines. It is thus desirable to find a more efficient way to update the data stored at the network communication devices of such a communication system.

Summary of the Invention

It is therefore an object of the present invention to provide a communication system and method that reduce the time and cost of overwriting data at one or more communication devices.

In order to accomplish this object, according to a first aspect of the present invention, the communication system of the present invention includes at least one communication device, each of which stores a first set of data and a second device connected to the communication device over a network, wherein the second device includes a transmission unit that transmits replacement data to the communication device over the network, and each communication device includes a storage unit that stores the first set of data, a reception unit that receives the replacement data, and an overwriting unit that writes the replacement data over the first set of data. Thus, replacement data used to overwrite a first set of data (the contents in a quick dial list or operational programs, for example) stored at the communication device is sent from the administering second device to the communication device over the network (e.g., LAN). The communication device receives the replacement data and writes that data over the first set of data. Since the replacement data is sent over the network and not the PSTN, the processing time and cost

needed for the second device to update the data stored at the communication device can be significantly reduced.

When the communication system includes two or more communication devices, each of the communication devices may receive replacement data from the second device and overwrites the first set of data simultaneously. This significantly reduces the processing time and cost needed for the second device to update the data stored at a plurality of communication devices.

The second device may be provided with a timer, and replacement data may be sent to the communication device(s) when the timer detects a specified time. This allows the procedure to be performed at an arbitrarily determined timing such as at night when the communication devices are not ordinarily in use.

It should be noted that although the terms "replacement data" and "overwrite" have been used for convenience, their meaning is not meant to limit the present invention to the replacement of data in its entirety. As described herein, the "replacement data" may be additional data to be appended to a table or the like, or may be only particular cells of a table stored in the memory of the communication device.

Brief Description of the Drawings

FIG. 1 is a block diagram of the communication system of the present invention;

FIG. 2 is a flow chart showing an embodiment of the procedure performed by an administrating computer (client computer) of the communication system shown in FIG. 1;

FIG. 3 is a flow chart showing an example of the procedure performed by a communication device (facsimile machine) of the communication system shown in FIG. 1; and

FIG. 4 is a flow chart showing another example of the procedure performed by the administrating computer of the communication system shown in FIG. 1.

Detailed Description of the Invention

Preferred embodiments of the present invention will now be described in detail with reference to the accompanying drawings.

Referring to FIG. 1, illustrated is a basic arrangement of a communication system of the present invention in which each of facsimile machines 1 is used for the communication device of the invention. Each of the facsimile machines 1 has essentially the same internal structure, and connected over a LAN 2. An administrating client computer 3 that manages the plurality of facsimile machines 1 is also connected to the LAN 2.

Each facsimile machine 1 is essentially comprised of a CPU 10, a RAM 11, a ROM 12, a flash memory 13, an image memory 14, a display unit 15, an operation panel 16, a scanner 17, a printer 18, a modem 19, a Network Control Unit ("NCU") 20 for connecting to the publicly switched telephone network ("PSTN"), and a LAN interface (LAN I/F) 21.

In each facsimile machine 1, the CPU 10 controls the various hardware elements of the machine 1 over an internal BUS 22, and executes the various software functions of the machine according to computer programs stored in the ROM 12 or flash memory 13.

RAM 11 stores various data, including a one-touch and speed dial list 11a of telephone numbers.

ROM 12 stores a data overwriting program for updating or changing the data stored in RAM 11. Flash memory 13 also stores various programs used in machine operation. Image memory 14 may include DRAM or the like, and stores image data that is to be sent or that has been received from other machines.

Display unit 15 includes an LCD, CRT, or similar display device, and displays among other information the operational status of the machine 1. It may also display image data of a document to be sent to another machine, or the image data received from

another machine. Operation panel 16 includes various function keys used to operate the machine 1; these keys may include, for example, a number pad, quick-dial keys, and the like. Display unit 15 may be comprised as a touch panel display, and may display all or only some of the function keys used to operate the machine 1 so as to serve as the second operational panel.

Scanner 17 scans a document using a CCD, and outputs document image data. Printer 18 may be comprised as an electro-photographic printing device, and is used to print out hard copies of image data received from other facsimile machines, or the image data scanned by the scanner 17.

Modem 19 is connected over BUS 22, and is a fax capable modem. The modem 19 is directly connected to the NCU 20. NCU 20 functions to connect and disconnect between an analog L and PSTN line (not shown), and when necessary connects the PSTN with the modem 19. By providing a DSU ("Digital Service Unit") the machine 1 can be allowed to connect to a digital ISDN line using a baseband transmission method.

LAN I/F 21 connects the machine 1 to a node on the LAN 2, enabling the machine 1 to communicate with client computer 3 over the LAN 2.

The administrating client computer 3 is principally comprised of a CPU 30, a ROM 31, a RAM 32, a timer 33, a LAN I/F 34, a drive for computer-readable medium, a display interface 36 ("Display I/F"), and an input interface 37 ("Input I/F").

CPU 30 controls the computer's 3 hardware components over internal BUS 38, and executes software functions according to computer programs stored in ROM 31.

ROM 31 is pre-loaded with various computer programs required to operate the computer 3. RAM 32 includes SRAM, DRAM or the like, and temporarily stores data generated during execution of the computer programs.

Timer 33 keeps time, and as described below, detects a specified time (the time at which a data overwriting procedure is to be carried out). LAN I/F 34 connects the computer 3 with a node on the LAN 2, allowing it to communicate with the facsimile

machines 1 in the network. Storage medium drive 35 is adapted to drive a computer-readable medium such as optical disk, CD-ROM, floppy disk, or the like, which is loaded thereinto by a user.

The display device 41 may be comprised as an LCD or CRT display, and may be enabled to display data received from the facsimile machines 1. The display 41 is connected to display interface 36. Input devices used to operate the computer 3 are also connected to the computer 3, and may include a keyboard 42, a mouse 43, and an input interface 37.

Operation

The communication system essentially functions such that at a specified time, the administrating computer 3 transmits replacement data to selected facsimile machines 1, to replace dialing list data in the speed-dial list 11a in the RAM 11 and to replace operational programs stored in the flash memory 13 of the individual facsimile machines 1. The facsimile machines 1 that receive the replacement data then execute a procedure to overwrite the data in the speed dial list 11a stored in RAM 11 and to overwrite operational programs stored in the flash memory 13.

The Administrating Computer

The operation of the administrating computer 3 will now be described with reference to the flow chart in FIG. 2.

When the program is launched, the CPU 30 of the computer 3 establishes replacement data (Step S1), and specifies a time at which the replacement data will be sent to a particular facsimile machine 1 to overwrite the existing data (Step S2). Next, the facsimile machine 1 at which the data is to be overwritten is specified (Step S3).

The timer 33 is set to detect whether or not the current time equals the specified

When the network facsimile machine 1 receives a data overwrite command from the client computer 3 (Step S11), the CPU 10 of the facsimile machine 1 determines whether or not it can overwrite the data (Step S12). If not (Step S12: NO) then the facsimile 1 sends a reply indicating it cannot overwrite the data to the client computer 3 (Step S16), and ends the procedure. If, however, the network facsimile 1 is capable of overwriting the data (Step S12: YES), then it sends a response to the client computer 3 indicating that it can overwrite the data (Step S13) and proceeds to step S14.

At step S14, the network facsimile 1 receives the replacement data from the client computer 3 over the LAN 2, and writes the replacement data into either the quick-dial list 11a in RAM 11 and/or flash memory 13 (Step S15).

It should be noted that the data overwriting procedure performed by the network facsimile machine may be arranged such that after overwriting the data, a message is sent back to the client computer 3 indicating that the data has been successfully overwritten. In such case, the client computer 3 then receives confirmation that the data overwriting has been completed.

Simultaneous Transmission from the Administrating Computer

An alternate operation performed by the administrating computer 3 will now be described with reference to the flow chart in FIG. 4. In this example of the procedure, the replacement data is broadcast simultaneously to all the facsimile machines 1 selected in the system.

The start of this procedure uses the same steps employed in the flow chart shown in FIG. 2 (steps S1 to S4), and so steps that are the same have been labeled with the same reference numbers.

In this example, it should be assumed that at least two facsimile machines 1 are specified at step S3. When the current time reaches the specified time (Step S4: YES), then the administrating computer 3 simultaneously broadcasts the data overwrite command

over the LAN 2 to all the facsimile machines 1 specified at step S3 (Step S25). The computer 3 then receives responses from the facsimile machines 1 indicating whether or not they can overwrite the data (Step S26). The administrating computer 3 then simultaneously broadcasts the replacement data to all the facsimile machines 1 that responded in step S26 that that they were able to overwrite the data (Step S27).

The operation performed by the facsimile machines 1 in response to that performed by the administrating computer 3 according to the flow chart shown in FIG. 4 would be essentially the same as that described by the flow chart in FIG. 3. The facsimile machines 1 that receive the replacement data from the computer 3 overwrite the old data with the replacement data at roughly the same time.

It should be noted that although the replacement data in the embodiments disclosed herein include quick-dial numbers and/or operating programs, replacement data encompasses a wide variety of other data. Additionally, the replacement data can be introduced to the client computer via optical disk, CD-ROM, floppy disk, or other external storage medium, or received from an external device. Furthermore, the replacement data can directly be input into the client computer 3 by a user of the computer 3.

As described hereinabove, in the communication system and method of the present invention, replacement data that replaces a first set of data stored at a communication device is sent from an administrating device to the communication device via a network, whereupon the replacement data is written over the first set of data. This substantially reduces the processing time and cost needed for the communication device to update the data stored at the communication device, relative to the conventional system that utilizes the PSTN.

Additionally, the communication system and method of the present invention may allow the replacement data to be simultaneously transmitted from the administrating device to a plurality of communication devices, and allow the data at the communication devices to be simultaneously overwritten with the replacement data. This further reduces the time

and cost needed to update data stored at a plurality of communication devices.

Still further, the communication system of the present invention allows the replacement data to be sent from the administrating machine to the communication devices, whereat the replacement data overwrites existing data, at a specified time. This allows the data overwriting process to be performed at an optimally selected time, when, for example, the communication device is not ordinarily in use, e.g., at night. Execution of overwriting process at such a time insures that the user can use the system with the updated information when he or she comes an office next morning.

The illustrated and described communication system and method are disclosed in Japanese Patent Application No. 11-198180 filed on July 12, 1999 in JPO and the instant application claims priority of this Japanese patent application, the entire disclosure of which is incorporated herein by reference.

CLAIMS

What is claimed is:

1. A communication system including at least one communication device, each of which stores a first set of data, and a second device connected to each of the at least one communication device over a computer network, wherein the second device includes a transmission unit that transmits replacement data to at least one of the at least one communication device via the computer network, and

each of the at least one communication device includes a storage unit capable of storing the first set of data, a reception unit that receives said replacement data, and an overwriting unit that writes the replacement data over the first set of data.

2. The communication system of claim 1 wherein the at least one communication device includes a plurality of communication devices, and the replacement data is received from the second device simultaneously by at least two of the plurality of communication devices.

3. The communication system of claim 1 wherein the second device further includes a timer that detects time, and the replacement data is sent to the communication device when the timer detects a predetermined time.

4. The communication system of claim 2 wherein the second device further includes a timer that detects time, and the replacement data is sent to the communication device when the timer detects a predetermined time.

5. The communication system of claim 3 wherein the replacement data includes at

least one of one touch and quick dial telephone numbers.

6. The communication system of claim 4 wherein the replacement data includes at least one of one touch and quick dial telephone numbers.

7. The communication system of claim 3 wherein the replacement data includes operating programs.

8. The communication system of claim 4 wherein the replacement data includes operating programs.

9. A communication system including a client computer, a local area network, and a plurality of facsimile machines connected to the client computer over the local area network, wherein at least two of the plurality of facsimile machines store at least either quick dial telephone numbers or operating programs, and the client computer simultaneously transmits replacement data to said two or more of the plurality of facsimile machines over the Local Area Network.

10. The communication system of claim 9 wherein the client computer is provided with a timer that detects time, and the replacement data is sent to the facsimile machines when the timer detects a predetermined time.

11. The communication system of claim 9 wherein the client computer transmits a data overwriting instruction to said facsimile machines, and said facsimile machines reply to the client computer indicating whether or not they are capable of overwriting the data.

12. A data overwriting method for a communication system that includes at least one communication device each of which stores a first set of data, and a second device connected to the at least one communication device over a computer network, the data overwriting method comprising the steps of:

transmitting replacement data from the second device to at least one the communication device over the computer network; and

replacing the first set of data with the replacement data at the at least one communication device.

13. The data overwriting method of claim 12 wherein the at least one communication device includes at least two communication devices, and the replacement data is transmitted from the second device to the two or more of the at least two communication devices simultaneously.

14. The data overwriting method of claim 12 wherein the second device is provided with a timer that detects time, and the step of transmitting the replacement data is performed when the timer detects a specified time.

15. The data overwriting method of claim 13 wherein the second device is provided with a timer that detects time, and the step of transmitting the replacement data is performed when the timer detects a specified time.

16. The data overwriting method of claim 12 wherein the replacement data includes at least either quick-dial telephone numbers or operating programs.

17. The data overwriting method of claim 13 wherein the replacement data includes quick-dial telephone numbers.

18. The data overwriting method of claim 14 wherein the replacement data includes quick-dial telephone numbers.

19. The data overwriting method of claim 15 wherein the replacement data includes quick-dial telephone numbers.

20. The data replacement method of claim 12 wherein the communication device is a facsimile machine.

Abstract of the Disclosure

Administrating client computer (3) is connected to a plurality of facsimile machines (1) over a LAN (2). The facsimile machines (1) store quick-dial telephone numbers in RAM (11), and operating programs in flash memory (13). The computer (3) sends replacement data for the quick dial telephone numbers and the operating programs of the facsimile machines (1) to the facsimile machines (1) over the LAN (2). The facsimile machines that receive the replacement data then overwrite the telephone numbers and operating programs with the replacement data.

FIG. 1

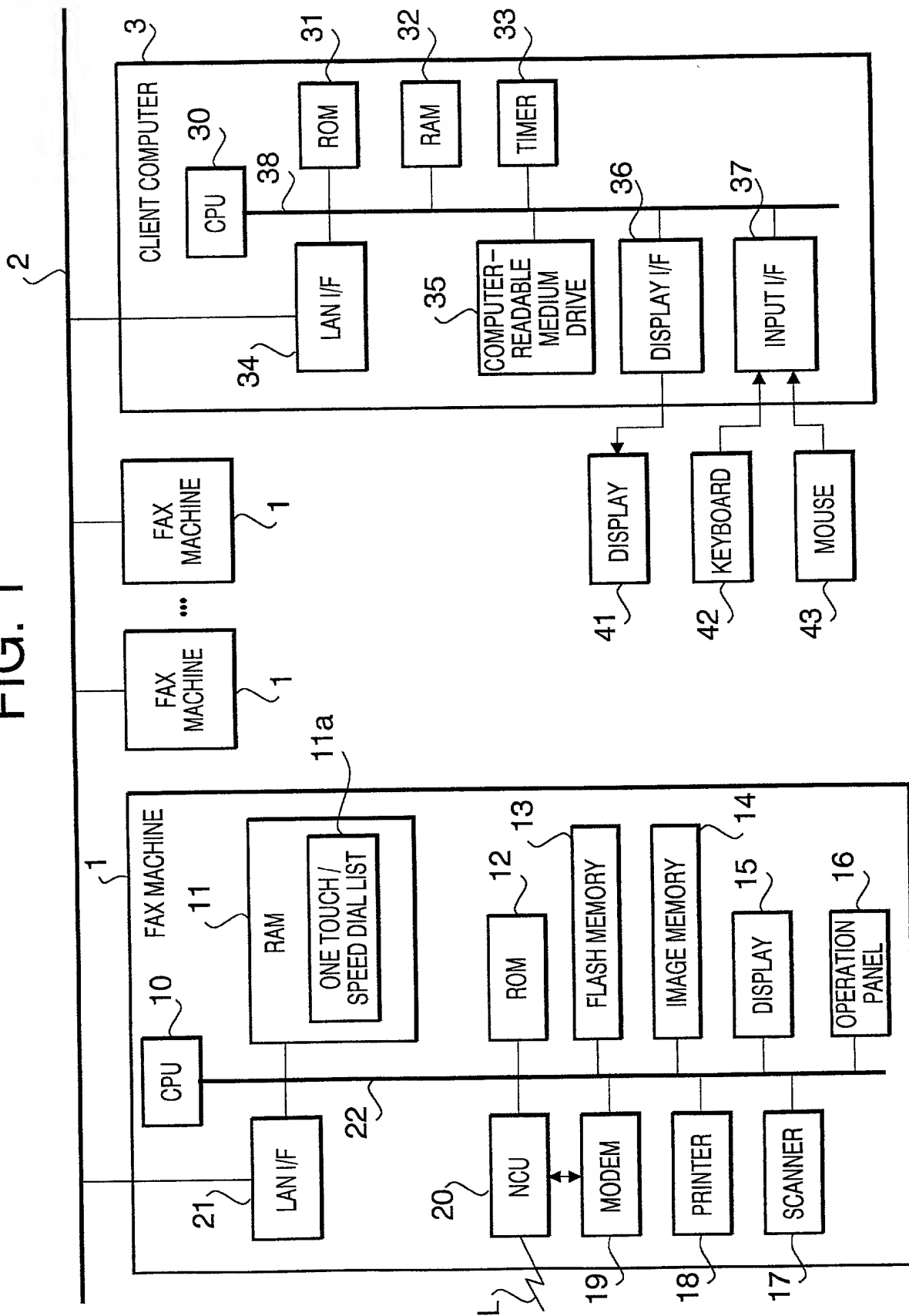


FIG. 2

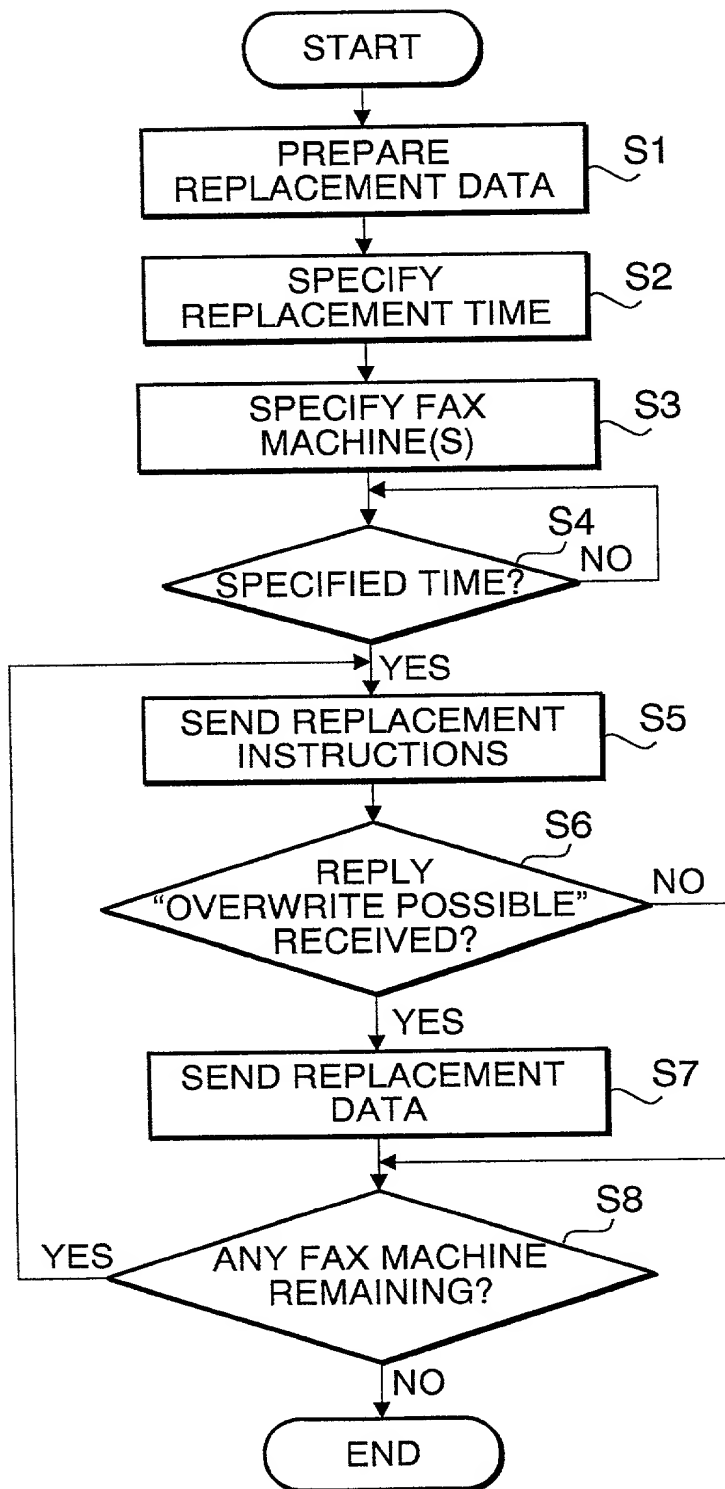


FIG. 3

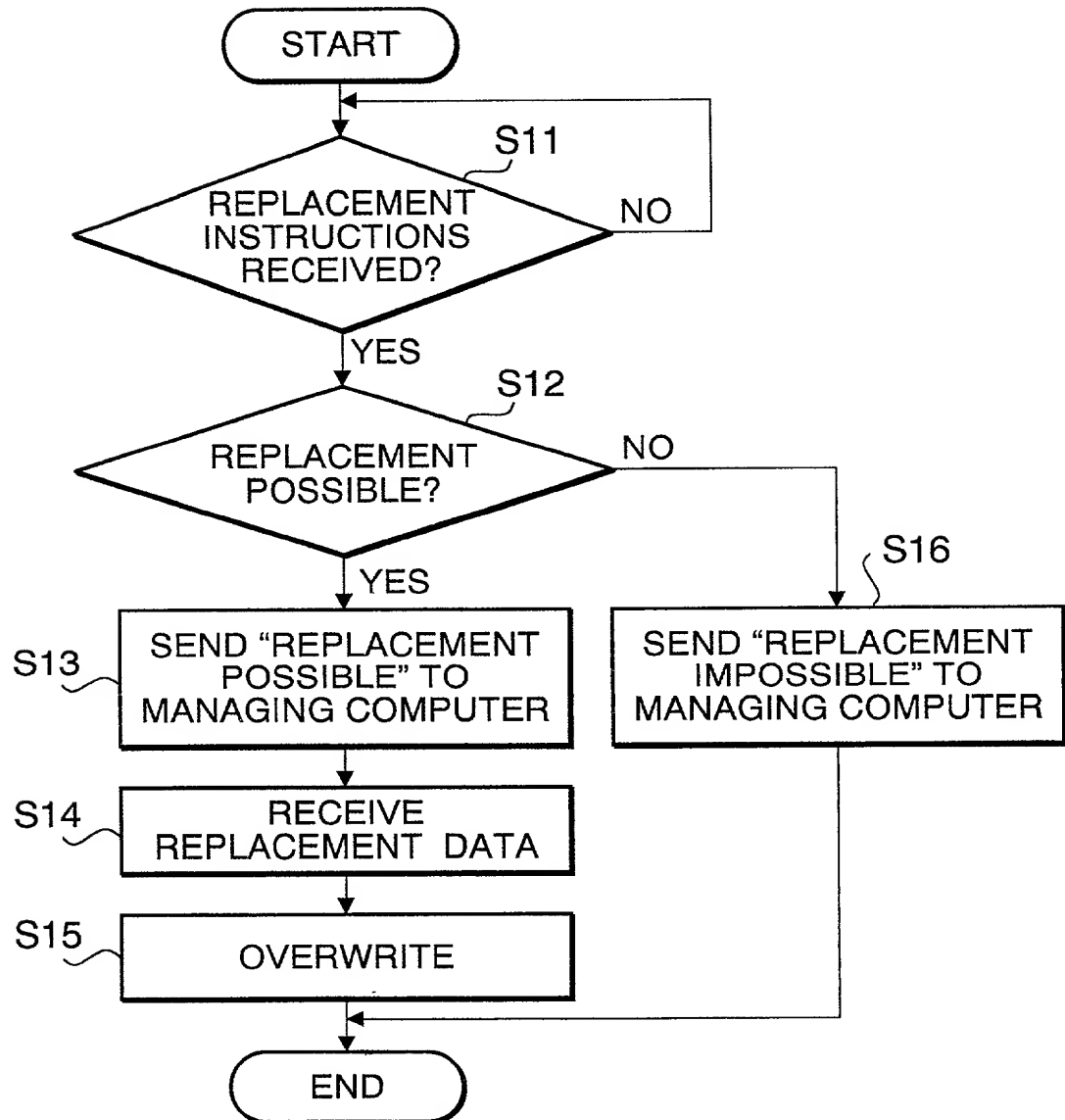
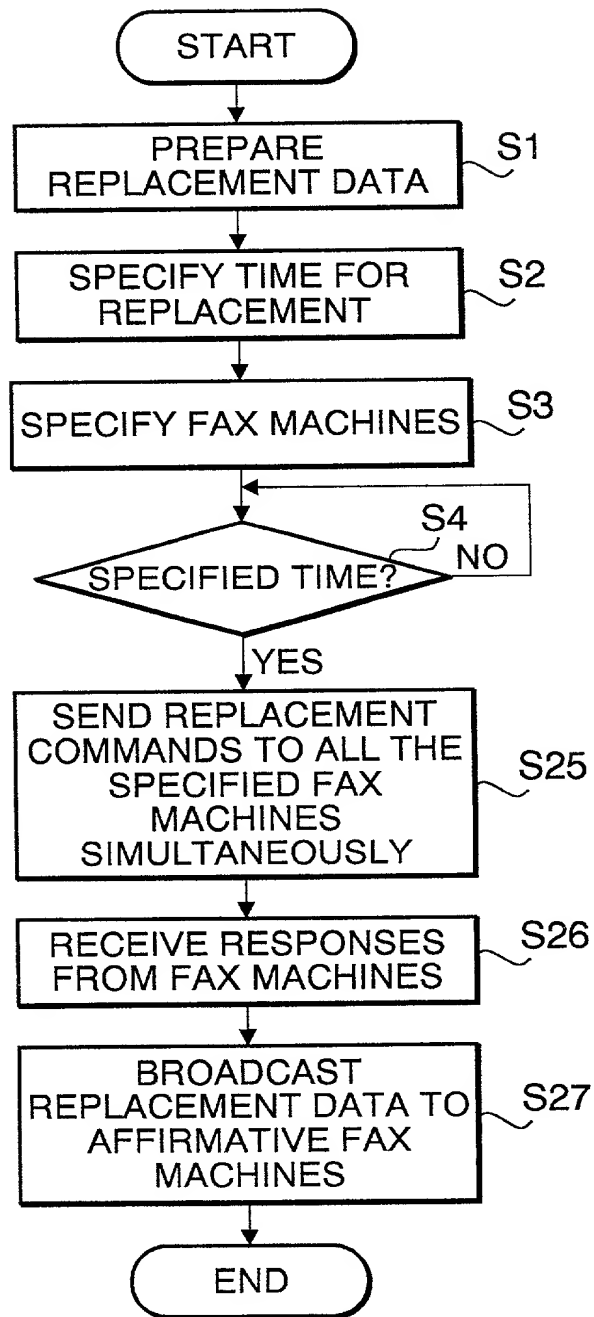


FIG. 4



DECLARATION
and POWER OF ATTORNEY☒ ORIGINAL
☐ CONTINUATION
☐ DIVISIONAL

KM-US-18

As a below named inventor, I declare that the information given herein is true, that I believe that I am the original, first and sole inventor (if only one name is listed as 1 below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

COMMUNICATION SYSTEM AND METHOD

the specification of which is attached hereto unless the following box is checked:

☐ was filed on _____ as United States Application Number or PCT International Application Number _____
and was amended on _____

My residence, post office address and citizenship are as stated below next to my name.

I acknowledge my duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations § 1.56(a). I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

PRIOR FOREIGN APPLICATION(S)

COUNTRY	APPLICATION NUMBER	DATE OF FILING Month Day Year	PRIORITY CLAIMED UNDER 35 U.S.C. 119
Japan	11-198180	July 12, 1999	Yes

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

(Application Serial No.)

(Filing Date)

(Status)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or Agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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4	Name of Inventor		Residence: CITY		STATE or COUNTRY	
	Post Office Address				CITIZENSHIP	

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 1	SIGNATURE OF INVENTOR 2
YOSHIFUMI TANIMOTO	
DATE	DATE
June 9, 2000	
SIGNATURE OF INVENTOR 3	SIGNATURE OF INVENTOR 4
DATE	DATE